

~~REPLAC~~AGROCHEMICAL COMPOSITION CONTAINING PHOSPHITE AND PROCESS FOR THE PREPARATIONART 3A
THE THEREOF5 Field of the Invention

This invention relates to a solid, granular and uniform in the particle size, water-soluble, agrochemical composition, containing phosphite and being homogeneous in the chemical composition, that contains at least one other NPK nutrient, and comprises metal microelements.

10

Background of the Invention

An ideal agrochemical composition would provide all elements necessary for the plant growth, it would provide some protection against pests, and it would not leave harmful or useless deposits in the soil. Such composition 15 should be further easy for storage, manipulation, usage, and marketing. From the aforesaid results that an ideal composition should be solid, particulate but not dusty, and water-soluble.

Phosphites are used in agrochemical compositions as a phosphorus source 20 and for their pesticidal potential. Publication WO 00/76941 claims potassium phosphites as a fertilizer for trees, vines and crops. U.S. Patent No. 5,514,200 teaches that phosphite fertilizers inhibit the beneficial symbiosis between plant roots and mycorrhizal fungi, and further promote

Other objects and advantages of present invention will appear as description proceeds.

5 Summary of the Invention

This invention provides an agrochemical composition that is solid, granular and uniform in particle size, and water-soluble, and contains phosphite and is homogeneous in the chemical composition, which composition contains at least one other NPK nutrient, and comprises metal microelements. The invention provides a process for manufacturing said agrochemical composition, which process is characterized in that it comprises i) blending and heating at a temperature from 60°C to 130°C a mixture containing phosphorous acid, at least one other NPK nutrient, metal microelements and other additives enhancing its fertilizing and pesticidal properties or modifying functional or aesthetic properties of the particles; ii) introducing a base into the mixture, thus at least partially neutralizing phosphorous acid, wherein the amount of the base is sufficient to provide that the pH of a 1% water solution of the final composition will be between 3.4 and 7.0; iii) homogenizing the mixture, while optionally lowering the pressure above the mixture; iv) and cooling the mixture, while obtaining a homogeneous, granular, free flowing and not caking material, containing from 0% to 1% water.

CLAIMS

1. A solid, granular agrochemical composition containing a salt of phosphorous acid and at least one other NPK nutrient, that is homogeneous in the chemical composition and uniform in particle size, that is water-soluble, and that comprises metal microelements.
2. An agrochemical composition of claim 1, wherein at least one of the nutrient is chosen from the group consisting of monoammonium phosphate, monopotassium phosphate, dipotassium phosphate, potassium chloride, ammonium chloride, potassium sulfate, ammonium sulfate, and urea.
3. An agrochemical composition of any one of claims 1 to 2, wherein the salt of phosphorous acid is chosen from potassium salt, ammonium salt, and sodium salt.
4. An agrochemical composition of any one of claims 1 to 3, wherein at least one of the metal microelements is chosen from the group consisting of zinc, copper, iron, manganese, molybdenum, and boron.
5. An agrochemical composition of any one of claims 1 to 4, wherein the metal microelements are present as any commercially available salt.
6. An agrochemical composition of any one of claims 1 to 4, wherein the metal microelements are present in the form chosen from the group

BEST AVAILABLE COPY

21. An agrochemical composition of any one of claims 1 to 20, which contains from 0.1 to 0.4 wt% water.
22. An agrochemical composition of any one of claims 1 to 21, which contains from 0.005 wt% to 2 wt% microelements.
23. An agrochemical composition of any one of claims 1 to 22, which contains from 15 to 35 wt% salts of phosphorous acid.
24. An agrochemical composition of any one of claims 1 to 23, which contains from 65 to 85 wt% of NPK nutrients, other than salts of phosphorous acid.
25. An agrochemical composition of any one of claims 1 to 24, which contains from 0.05 wt% to 0.5 wt% microelements.
26. An agrochemical composition of any one of claims 1 to 25, which provides a solution having pH 3.8-5.3, when dissolved 1 part in 100 parts of water.
27. An agrochemical composition of any one of claims 1 to 26, which is a free flowing, solid particles, composition.
28. A process for the manufacture of an agrochemical composition, comprising i) blending and heating at a temperature from 60°C to 130°C a mixture containing phosphorous acid, at least one other NPK nutrient, metal microelements and other additives; ii) introducing a